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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/029,190	12/19/2001	Xianbin Wang	28940-00117USPT 00-OT-081	5397

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EXAMINER	
PATHAK, SUDHANSHU C	
ART UNIT	**PAPER NUMBER**
2634	

DATE MAILED: 06/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/029,190	WANG, XIANBIN	
	Examiner	Art Unit	
	Sudhanshu C. Pathak	2634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *December 19th, 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-34* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *May 7th, 2002* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 2.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-to-34 are pending in the application.

Drawings

2. Figures 1-3 & 6 should be designated by a legend such as "Prior Art" because only that which is known is illustrated.

Specification

3. The disclosure is objected to because of the following informalities:

The specification on Page 1, lines 3-4, discloses "for patent Serial No._____", however, no serial number is provided.

Appropriate correction is required.

Double Patenting

4. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

5. Claims 1, 2, 7, 8 & 13, 14, 19, 20 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 8 (a dependent claim comprising the limitations of

claims 1, 5-7) of copending Application No. 10/028805 (PG-PUB US 2003/0117963). Although the conflicting claims are not identical, they are not patentably distinct from each other.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claims 1, 7, 8 & 13, 19, 20 of the instant application disclose a method (and apparatus) for optimizing digital subscriber line (DSL) communications performance over a cable bundle having a plurality of loops and including at least one active DSL loop comprising the steps of: determining, for a new DSL loop communication, a required bit rate of that new DSL loop communication, the determined required bit rate corresponding to a required bandwidth that is smaller than a total available bandwidth on one of the plurality of loops (This limitation is disclosed in the above mentioned copending application in Claim 6, lines 1-4 & Claim 7, lines 1-4); calculating, for a plurality of location positions of the required bandwidth for the new DSL loop communication within the total available bandwidth, a crosstalk noise effect with respect to the at least one active DSL loop (This limitation is disclosed in the above mentioned copending application in Claim 6, lines 6-11 & Claim 7, lines 6-11); and choosing location position for the required bandwidth to carry the new DSL loop communication within the total available bandwidth where the calculated crosstalk noise effect with respect to the at least one active DSL loop is minimized (This limitation is disclosed in the

above mentioned copending application in Claim 6, lines 12-16 & Claim 7, lines 12-16).

Claims 2 & 14 of the instant application further discloses the method (apparatus) wherein the step of choosing comprises the step of choosing a location position for the required bandwidth for the new DSL loop communication within the total available bandwidth where the calculated crosstalk noise effect with respect to the at least two active DSL loops is minimized (This limitation is disclosed in the above mentioned copending application in Claim 6, lines 12-16 & Claim 7, lines 12-16). Furthermore, there is no criticality minimizing the calculated crosstalk noise effect with respect to at least two active DSL loops is a matter of design choice depending on the active loops in the DSL bundle, and requires a different or multiple optimization function(s).

6. Claims 3, 4, 5 & 15, 16, 17 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 8 (a dependent claim comprising the limitations of claims 1, 5-7) of copending Application No. 10/028805 (PG-PUB US 2003/0117963) in view of Sonalkar et al. (WO 01/61956).

   This is a provisional obviousness-type double patenting rejection.

   Claims 3 & 15 of the instant application further disclose the method (apparatus) wherein the required bandwidth corresponds to a certain number of subcarriers (This limitation is disclosed in WO 01/61956 in Specification, Page 2, lines 9-16 & Specification, Page 3, lines 15-25 & Specification, Page

4, lines 9-22 & Specification, Page 5, lines 17-21 & Specification, Page 9, lines 12-26). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Sonalkar discloses a DMT modem implemented in a DSL system wherein the transmitted bandwidth is subdivided into a number of sub-bands or subcarriers. Furthermore, the limitation as described in the instant application claim 3 is inherent to a DMT modem in a DSL system.

Claims 4 & 16 of the instant application further discloses the method (apparatus) wherein the certain required bandwidth varies with the plurality of location positions for the required bandwidth within the total available bandwidth (This limitation is disclosed in WO 01/61956 in Specification, Page 2, lines 9-16 & Specification, Page 3, lines 8-12 & Specification, Page 6, lines 4-8 & Specification, Page 10, lines 11-25). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Sonalkar teaches that in a DMT modem each sub-band has a different data capacity, and therefore the location of the transmission bandwidth (no. of subcarriers) will vary with the location of the bandwidth.

Claims 5 & 17 of the instant application further discloses the method (apparatus) wherein the varying the certain number of subcarriers, location position for the required bandwidth having minimized crosstalk noise effect, effectuates a reduction in DSL modem power consumption (This limitation is disclosed in WO 01/61956 Abstract, lines 1-7 & Specification, Page 3, lines 3-15 & Specification, Page 5, lines 25-28 & Specification, Page 6, lines 4-8).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Sonalkar teaches an algorithm for optimizing the transmission of data in a DMT system wherein the optimizing function minimizes the power required for transmission of the data for a given BER performance of the data and the NEXT interference, and this can be achieved with the selection of the subcarrier bands of the transmission.

7. Claims 6 & 18 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 9 (a dependent claim comprising the limitations of claims 1, 5-8) of copending Application No. 10/028805 (PG-PUB US 2003/0117963). Although the conflicting claims are not identical, they are not patentably distinct from each other.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claims 6 & 18 of the instant application further discloses the method (apparatus) wherein the step of calculating further includes the step of sliding the required bandwidth across the total available bandwidth at the plurality location positions for which crosstalk noise effect is calculated (This limitation is disclosed in the above mentioned copending application in Claim 9, lines 1-5).

8. Claims 10 & 22 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 10 (a dependent claim comprising the limitations of claims 1, 5-8) of

copending Application No. 10/028805 (PG-PUB US 2003/0117963). Although the conflicting claims are not identical, they are not patentably distinct from each other.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claims 10 & 22 of the instant application further discloses the method (apparatus) wherein the crosstalk noise effect is near-end crosstalk (NEXT) noise effect (This limitation is disclosed in the above mentioned copending application in Claim 10, lines 1-2).

9. Claims 11 & 23 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 11 (a dependent claim comprising the limitations of claims 1, 5-8) of copending Application No. 10/028805 (PG-PUB US 2003/0117963). Although the conflicting claims are not identical, they are not patentably distinct from each other.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claims 11 & 23 of the instant application further discloses the method (apparatus) wherein the calculated crosstalk noise effect is an estimation calculated effect (This limitation is disclosed in the above mentioned copending application in Claim 11, lines 1-2).

10. Claims 12 & 24 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over

claim 12 (a dependent claim comprising the limitations of claims 1, 5-8) of copending Application No. 10/028805 (PG-PUB US 2003/0117963). Although the conflicting claims are not identical, they are not patentably distinct from each other.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claims 12 & 24 of the instant application further discloses the method (apparatus) wherein the calculated crosstalk noise effect is an analytically calculated effect (This limitation is disclosed in the above mentioned copending application in Claim 12, lines 1-2).

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

12. Claims 1-8, 10-20 & 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Applicant Admitted Prior Art (AAPA) in view of Sonalkar et al. (WO 01/61956).

Regarding to Claims 1-8, 10-20 & 22-24 the Applicant Admitted Prior Art (AAPA) discloses a method and apparatus for transmitting data in a DSL system over a cable bundle having a plurality of loops and including at least one active DSL loop (Specification, Page 2, lines 5-8 & Specification, Page 3,

lines 7-8). The AAPA also discloses crosstalk to be the interference on a particular DSL communication loop due to the communication on another, closely proximate, active loop in the same cable bundle (Specification, Page 2, lines 5-13 & Specification, Page 3, lines 7-13). The AAPA also discloses crosstalk noise to include both near-end crosstalk (NEXT) and far-end crosstalk (FEXT) wherein it is generally accepted that NEXT presents a more dominant source of interference in DSL subscriber lines (Specification, Page 2, lines 13-22). The AAPA also discloses in a DSL system when the bit rate, depending on the application, is smaller than the available bandwidth, idle ATM cells (filler material) are inserted to fill up all the data frames of the DSL link (for both upstream and downstream) (Specification, Page 3, lines 1-6 & Specification, Page 4, lines 9-14 & Specification, Page 10, lines 12-22 & Specification, Page 11, lines 1-5). The AAPA further discloses the insertion of the idle cells increases the power consumption for both of the line drivers at the central office (CO) and the customer premise equipment (CPE) thus increasing the NEXT noise (Specification, Page 3, lines 1-6, 14-22 & Specification, Page 4, lines 7-14 & Specification, Page 10, lines 12-22 & Specification, Page 11, lines 1-5). The AAPA further discloses multiple algorithms for minimizing NEXT noise in DSL system implementations (Specification, Page 9, lines 9-16). However, the AAPA does not disclose the method for optimizing a DSL communication performance to include calculating, for a plurality of locations of the required bandwidths within the available bandwidth, a crosstalk noise effect with respect to at least one

active DSL loop and choosing a location position for the required bandwidth within the total available bandwidth, where the crosstalk noise effect is minimized.

Sonalkar discloses a method for minimizing cross talk over a twisted pair of a twisted pair cable binder (Abstract, lines 1-2). Sonalkar also discloses the method comprising the steps of one jointly minimizing near end cross talk (NEXT) while maximizing total data rate, minimizing NEXT while for a given data rate and minimizing an arbitrary function of total power while maximizing total data rate (Abstract, lines 3-7). Sonalkar also disclosed selecting a function to be optimized and performing a bit and power allocation algorithm responsive to the selected function (Abstract, lines 7-9). Sonalkar also discloses that the modem at the central office (CO) and remote terminal (RT) negotiate an initial channel signal-to-noise ratio (SNR) estimation and during the procedure the receiver contains algorithms for determining the power distribution across the full frequency bandwidth for maximum data throughput (Specification, Page 4, lines 23-28 & Specification, Page 5, lines 1-7 & Specification, Page 10, lines 11-25). Sonalkar also discloses in a DMT modem a transmission frequency band is separated into "N" sub-bands or frequency bins wherein each sub-band has a different capacity as a result of a variation of noise and attenuation with frequency (Specification, Page 2, lines 9-12 & Specification, Page 9, lines 12-26). Sonalkar also discloses DSL modems that uses DMT modulation concentrate the transmitted information in the frequency sub-bands that have minimum attenuation and noise

(Specification, Page 4, lines 11-14). Sonalkar also discloses algorithms implemented in DSL modems utilizing various performance functions that minimize the total allocated power or maximize the data rate or a combination of the two with the purpose of either maximizing the total transmitted data or meeting the desired data rate within the constraints of the budgeted power (Specification, Page 5, lines 25-28). Sonalkar also discloses the method for allowing any bit/power allocation algorithm to meet the objective of minimizing NEXT (Specification, Page 6, lines 21-23 & Fig. 6). Sonalkar also discloses optimizing the NEXT parameter (minimizing the total NEXT) for the bit and power allocation algorithms rather than minimizing the total power consumed (Specification, Page 11, lines 1-26). Sonalkar also discloses various objective functions for optimization in joint minimization of the NEXT (Fig. 6 & Specification, Page 15, lines 1-27 & Specification, Page 16, lines 1-12). Sonalkar also discloses a model of power spectral density (PSD) of NEXT that is caused by "n" identical power sources Specification, Page 11, lines 7-23). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Sonalkar teaches the optimization of various performance functions in joint conjunction with the minimization of NEXT wherein the bandwidth of transmission is selected based on the optimization parameters and this can be implemented in the DSL modem as described in the AAPA so as to maximize the throughput for the desired data rate so as to minimize NEXT noise and provide a more reliable communication path for data transfer. Furthermore, there is no criticality in determining the cross talk

noise effect with respect to two active DSL loops is minimized, this is a matter of design choice and can be calculated as described in the model as described in Sonalkar. Furthermore, there is again no criticality in implementing the NEXT reduction as described in the AAPA in view of Sonalkar in both the upstream and downstream data transmission directions i.e. implementing the method in both the CO and RT, this is a matter of design choice.

13. Claims 9, 21 & 25-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Applicant Admitted Prior Art (AAPA) in view of Sonalkar et al. (WO 01/61956) in further view of Cole (WO 00/52894).

Regarding to Claims 9 & 21 the AAPA in view of Sonalkar discloses a method for optimizing a method in a DSL communication system over a cable bundle having a plurality of loops comprising determining a required bit rate corresponding to a required bandwidth that is smaller than the total available bandwidth; calculating the crosstalk noise for a plurality of locations of the required bandwidth; and choosing a location wherein the crosstalk is minimized with respect to at least one active DSL loop as described above. The AAPA further discloses inserting idle ATM cells (filler material) are inserted to fill up all the data frames of the DSL link (for both upstream and downstream) (Specification, Page 3, lines 1-6 & Specification, Page 4, lines 9-14 & Specification, Page 10, lines 12-22 & Specification, Page 11, lines 1-5). However the AAPA in view of Sonalkar does not disclose the step of removing unnecessary idle ATM cells and the required bit rate is the bit rate

needed for data communications without the inclusion of unnecessary idle ATM cells.

Cole discloses a transceiver to receive data to include a usage-monitoring unit wherein the data includes both the actual data and the idle cell data (Abstract, lines 1-5) implemented in a DSL communication system (Specification, Page 1, lines 7-40). Cole further discloses determining a usage parameter based on the actual data (Abstract, lines 5-9). Cole further discloses that when the user is not fully utilizing the available (allotted) bandwidth idle cells are inserted to bring the overall data rate up wherein the idle cells are removed in the receiver, but still require the same power and processing resources at the transmitter (Specification, Page 2, lines 19-24). Cole further discloses the usage monitoring unit (Fig. 2, element 170) determines the average and peak data flows based on the actual data (Specification, Page 5, lines 1-4) and adjust the bit loading to the dynamic throughput requirements (Specification, Page 3, lines 35-40 & Specification, Page 5, lines 29-33 & Specification, Page 6, lines 11-13, 33-37 & Claim 4). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Cole teaches removing the unnecessary idle ATM cells, and the required bit rate for the loop is a bit rate needed for data communication without the inclusion of unnecessary idle ATM cells and this can be implemented in the modem as described in the AAPA in view of Sonalkar so as to provide (adjust) the necessary bandwidth for the transfer of

data without having to include the unnecessary idle ATM cells, thus satisfying the limitations of the claims.

Regarding to Claims 25-34 the Applicant Admitted Prior Art (AAPA) discloses a method and apparatus for transmitting data in a DSL system over a cable bundle having a plurality of loops and including at least one active DSL loop (Specification, Page 2, lines 5-8 & Specification, Page 3, lines 7-8). The AAPA also discloses crosstalk to be the interference on a particular DSL communication loop due to the communication on another, closely proximate, active loop in the same cable bundle (Specification, Page 2, lines 5-13 & Specification, Page 3, lines 7-13). The AAPA also discloses crosstalk noise to include both near-end crosstalk (NEXT) and far-end crosstalk (FEXT) wherein it is generally accepted that NEXT presents a more dominant source of interference in DSL subscriber lines (Specification, Page 2, lines 13-22). The AAPA also discloses in a DSL system when the bit rate, depending on the application, is smaller than the available bandwidth, idle ATM cells (filler material) are inserted to fill up all the data frames of the DSL link (for both upstream and downstream) (Specification, Page 3, lines 1-6 & Specification, Page 4, lines 9-14 & Specification, Page 10, lines 12-22 & Specification, Page 11, lines 1-5). The AAPA further discloses the insertion of the idle cells increases the power consumption for both of the line drivers at the central office (CO) and the customer premise equipment (CPE) thus increasing the NEXT noise (Specification, Page 3, lines 1-6, 14-22 & Specification, Page 4, lines 7-14 & Specification, Page 10, lines 12-22 & Specification, Page 11,

lines 1-5). The AAPA further discloses multiple algorithms for minimizing NEXT noise in DSL system implementations (Specification, Page 9, lines 9-16). However, the AAPA does not disclose the method for optimizing a DSL communication performance to include calculating, for a plurality of locations of the required bandwidths within the available bandwidth, a crosstalk noise effect with respect to at least one active DSL loop and choosing a location position for the required bandwidth within the total available bandwidth, where the crosstalk noise effect is minimized.

Sonalkar discloses a method for minimizing cross talk over a twisted pair of a twisted pair cable binder (Abstract, lines 1-2). Sonalkar also discloses the method comprising the steps of one jointly minimizing near end cross talk (NEXT) while maximizing total data rate, minimizing NEXT while for a given data rate and minimizing an arbitrary function of total power while maximizing total data rate (Abstract, lines 3-7). Sonalkar also disclosed selecting a function to be optimized and performing a bit and power allocation algorithm responsive to the selected function (Abstract, lines 7-9). Sonalkar also discloses that the modem at the central office (CO) and remote terminal (RT) negotiate an initial channel signal-to-noise ratio (SNR) estimation and during the procedure the receiver contains algorithms for determining the power distribution across the full frequency bandwidth for maximum data throughput (Specification, Page 4, lines 23-28 & Specification, Page 5, lines 1-7 & Specification, Page 10, lines 11-25). Sonalkar also discloses in a DMT modem a transmission frequency band is separated into "N" sub-bands or

frequency bins wherein each sub-band has a different capacity as a result of a variation of noise and attenuation with frequency (Specification, Page 2, lines 9-12 & Specification, Page 9, lines 12-26). Sonalkar also discloses DSL modems that uses DMT modulation concentrate the transmitted information in the frequency sub-bands that have minimum attenuation and noise (Specification, Page 4, lines 11-14). Sonalkar also discloses algorithms implemented in DSL modems utilizing various performance functions that minimize the total allocated power or maximize the data rate or a combination of the two with the purpose of either maximizing the total transmitted data or meeting the desired data rate within the constraints of the budgeted power (Specification, Page 5, lines 25-28). Sonalkar also discloses the method for allowing any bit/power allocation algorithm to meet the objective of minimizing NEXT (Specification, Page 6, lines 21-23 & Fig. 6). Sonalkar also discloses optimizing the NEXT parameter (minimizing the total NEXT) for the bit and power allocation algorithms rather than minimizing the total power consumed (Specification, Page 11, lines 1-26). Sonalkar also discloses various objective functions for optimization in joint minimization of the NEXT (Fig. 6 & Specification, Page 15, lines 1-27 & Specification, Page 16, lines 1-12). Sonalkar also discloses a model of power spectral density (PSD) of NEXT that is caused by "n" identical power sources Specification, Page 11, lines 7-23). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Sonalkar teaches the optimization of various performance functions in joint conjunction with the minimization of NEXT

wherein the bandwidth of transmission is selected based on the optimization parameters and this can be implemented in the DSL modem as described in the AAPA so as to maximize the throughput for the desired data rate so as to minimize NEXT noise and provide a more reliable communication path for data transfer. Furthermore, there is no criticality in determining the cross talk noise effect with respect to two active DSL loops is minimized, this is a matter of design choice and can be calculated as described in the model as described in Sonalkar. Furthermore, there is again no criticality in implementing the NEXT reduction as described in the AAPA in view of Sonalkar in both the upstream and downstream data transmission directions i.e. implementing the method in both the CO and RT, this is a matter of design choice. However the AAPA in view of Sonalkar does not disclose the step of removing unnecessary idle ATM cells and the required bit rate is the bit rate needed for data communications without the inclusion of unnecessary idle ATM cells.

Cole discloses a transceiver to receive data to include a usage-monitoring unit wherein the data includes both the actual data and the idle cell data (Abstract, lines 1-5) implemented in a DSL communication system (Specification, Page 1, lines 7-40). Cole further discloses determining a usage parameter based on the actual data (Abstract, lines 5-9). Cole further discloses that when the user is not fully utilizing the available (allotted) bandwidth idle cells are inserted to bring the overall data rate up wherein the idle cells are removed in the receiver, but still require the same power and

processing resources at the transmitter (Specification, Page 2, lines 19-24). Cole further discloses the usage-monitoring unit (Fig. 2, element 170) determines the average and peak data flows based on the actual data (Specification, Page 5, lines 1-4) and adjust the bit loading to the dynamic throughput requirements (Specification, Page 3, lines 35-40 & Specification, Page 5, lines 29-33 & Specification, Page 6, lines 11-13, 33-37 & Claim 4). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Cole teaches removing the unnecessary idle ATM cells, and the required bit rate for the loop is a bit rate needed for data communication without the inclusion of unnecessary idle ATM cells and this can be implemented in the modem as described in the AAPA in view of Sonalkar so as to provide (adjust) the necessary bandwidth for the transfer of data without having to include the unnecessary idle ATM cells, thus satisfying the limitations of the claims.

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure, it is recommended to the applicant to amend all the claims so as to be patentable over the cited prior art of record. A detailed list of pertinent references is included with this Office Action (See Attached "Notice of References Cited" (PTO-892)).

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sudhanshu C. Pathak whose

telephone number is (571)-272-3038. The examiner can normally be reached on M-F: 9am-6pm.

- If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on (571)-272-3056
- The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.
- Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Sudhanshu C. Pathak

STEPHEN CHIN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600